

Information

Parietaria

A Newly Identified Cause of Pollen Allergy in California

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In northern California, seasonal respiratory allergy customarily ends in late fall with conifer pollen. The last significant weeds known in the fall season to cause allergy include the chenopods, mugworts, and Compositae, and their season usually ends by the last of October.¹

In late November 1987, a patient was seen for asthma and allergic rhinitis that had exacerbated the same month. She had been symptom-free since the previous spring. Enhanced environmental control and dietary elimination and challenge failed to alter her clinical course. During the second visit, the patient observed that beginning in mid-October, gardening in her backyard was followed immediately by symptoms. A pollinating plant with small, white blossoms and dark red stems was brought by the patient to my office. To confirm my suspicion, the plant cuttings were submitted to the botany departments of the University of California, Berkeley and Davis, where the plant was identified as *Parietaria judaica* (Barbara Ertter, Collections Manager, University and Jepson Herbaria, University of California, Berkeley, and June McCaskill, Senior Herbarium Botanist, Botany Department, University of California, Davis, written communications, December 1987). This plant is the predominant source of weed pollen allergy in Europe but not known to be a cause of allergy in the United States.

A small amount of allergy testing material was prepared in my laboratory by using Coca's extracting fluid. Prick testing with 1:40 dilution of the extract from pollen of blossoms provided by the patient produced a greater than 1 cm by 0.6 cm pseudopod reaction surrounded by 0.8 cm erythema. A larger reaction was produced by skin testing with a 5% solution of *P. judaica* and *Parietaria officinalis* antigen obtained from Italy.* A similar skin test reaction occurred when a 1:40 extract of the leaves and stems was applied. The control was negative. Ten grass-sensitive and five atopic non-grass-sensitive patients were nonreactive to the *Parietaria* extracts from Italy. Rebreathing from a bag containing the freshly harvested weed preceded a 25% drop in her maximal expiratory flow rate as measured by the Wright Peak Flow Meter. She blew 460 liters per minute, 30 liters less than her predicted value and 100 liters more than her performance following rechallenge with a weed-filled bag.² At a later date the maneuver was carried out substituting cuttings of pollinating Monterey pine boughs. This time there was no change in her flow rates. In late December, the plant blossoms wilted, as did the patient's symptoms.

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Parietaria derives its name from the Latin *parietarius*, "of walls," where the plant likes to grow, as Pliny knew when he described it,³ and where it thrives along the wall fence at the home of this patient (Figure 1).

Parietaria is especially a problem as a cause of allergy in the south and west of Europe.^{4,5} It harbors no needles but belongs to the Urticaceae family, which includes nettle plants. Three other major species, *Parietaria floridana*, *Parietaria pensylvanica*, and *P. judaica*, are widespread in the United States.^{6,7} *P. judaica* is a wind-pollinated perennial weed that represents only 1 of at least 500 other species in its family.⁸ There is thought to be no cross-sensitivity of the two allergy-causing genera of Urticaceae (*Parietaria* and *Urtica*)⁹; however, *Urtica*-positive tests were reported in 1873 by Blackley when he did the first skin test.¹⁰ *Parietaria* has been identified in the United States for 180 years and in northern California for more than 65 years.⁷ A review of early American allergy texts finds no mention of *Parietaria* as a cause of



Figure 1.—A *Parietaria* plant is shown growing in a yard near the geographic center of San Francisco. A unique characteristic of the leaves is the way in which the veins come off in an alternate rather than a symmetric pattern. The floral buds, which look like small hot cross buns, are attached directly to the maroon stems. When ripe, the buds burst open to emit a fine, creamy yellow pollen (photograph by author).

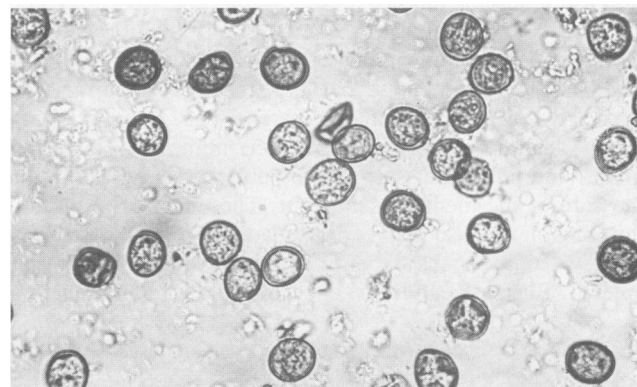


Figure 2.—The expanded spherical pollen of *Parietaria* is typically 15 μ m in diameter. The specimen was prepared by Berkeley Biologicals, Berkeley, California, from cuttings submitted in November 1987. Visualization of its smooth, thin exine is enhanced using Calberla's basic fuchsin stain. By using Kodak Technical-Pan 6415 film, the coarse granular protoplasm is more easily seen within the pollen grains (original magnification $\times 400$; photograph by author).

allergy in the United States.¹¹⁻¹⁶ There are no reports of skin test reactions or of respiratory sensitivity to *Parietaria* in this country according to the MEDLINE data base from 1967 to 1988.¹⁷

On a house call to the patient's home, I found the plant growing along both sides of the back wall of the yard and against the garage. The weed was found around the perimeter of the next-door-neighbor's yard in greater abundance. The neighbor volunteered that she was currently a patient in the allergy clinic at a large teaching hospital in San Francisco where the cause of her asthma is unknown. A six-block area was surveyed, and *Parietaria* was located growing in many front yards and vacant lots encircling the patient's home. Another search for the plant found it growing near the geographic center of the city. Eight years ago, a European allergist reported *P. judaica* growing at the Fisherman's Wharf area of San Francisco.¹⁸

It is not known if the case reported here is an isolated problem. The distribution of *Parietaria* in northern California and the frequency of skin test reactivity among atopic subjects are currently under investigation. Why has *Parietaria* in California not been associated with symptoms before? The explanation may be that when the pollen is examined under a microscope, it appears very much like mold unless properly stained (Figure 2).¹⁹ The question is whether something has occurred in the atmosphere, the character of the plant has changed, or there has been a change in the response of the host. Physicians treating patients with respiratory allergy should be vigilant for this previously unidentified cause of asthma and allergic rhinitis.

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